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Problem Statement: Autism Spectrum Disorder is a neurodevelopmental disorder that affects communication, social interaction and behavior. The effects and severity of autism can range greatly, but the effects are typically related to a struggle or inability to recognize social cues, delayed communication skills, and fixations to certain tasks or subjects. About 1 in 100 children are diagnosed with autism. Early detection and diagnosis in children is critical because it can lead to better outcomes because early intervention and support can change a child's long-term developmental trajectory. Traditional diagnostic approaches for ASD can be time-consuming, and costly, requiring the help of multiple specialists. This process may be burdensome for families, thus delaying early intervention and services. For a solution to this problem, we are creating a deep learning based model that will predict the probability that a child has autism based on their image.

Dataset Description: https://www.kaggle.com/datasets/cihan063/autism-image-data
In total, this dataset contains 2,940 image samples containing images of children, half of which are diagnosed with autism and half of which are not. Since the only attributes are whether or not the child is diagnosed with autism there is no need for the images to be individually labeled, however they are numbered. By default there are already separate files that split up the test and training data, with 300 images in the test set and 2,540 images in the training set. However, for our project we will manually split up the images in order to have more control over how much test and training data we want for our model.

Goals: We intend to generate an image processing model that can help diagnose autism in children. To create this model, we aim to use deep learning strategies such as Convolutional Neural Networks, aided by different learning strategies such as Transfer Learning, and also utilize facial recognition algorithms. Additionally, we will use image manipulation methods to prepare images for our model. This project aims to aid in autism research and finding ways to diagnose patients early on in their lives without the extra time and monetary burden.

Timeline:
- Week 2: Finalized problem statement and project focus.
- Week 3: Exploratory data analysis and building understanding with the dataset.
- Week 4: Begin image processing to prepare images for a future model
- Week 5: Explore deep learning techniques, and continue image processing work
- Week 6: Begin Creating deep learning model
- Week 7: Continue building model, start on the final report
- Week 8: Build Website to display our model, continue report and building model
- Week 9: Finish Report
- Week 10: Finalizing Report and presentation